

CLAIMS

1. Process for the production of aldonic acids with the general formula (I):
- $$\text{HOCH}_2 - (\text{CHOH})_n - \text{COOH} \quad (\text{I})$$
- 5 wherein n is an integer from 1 to 4,
and their salts or lactones,
comprising the following steps:
- a) reduction of gold(III) and platinum(II) compounds to colloidal gold and platinum from an aqueous solution containing a gold(III) compound or a mixture of gold(III) and platinum(II) compounds and, in the capacity of
10 colloid-protecting agent, a monosaccharide with six carbon atoms or a disaccharide formed by two monosaccharide units with six carbon atoms;
- b) addition of an aldose with the formula (II)
- $$\text{HOCH}_2 - (\text{CHOH})_n - \text{CHO} \quad (\text{II})$$
- 15 wherein n is as previously defined;
- c) oxidation with oxygen or a gas containing oxygen.
2. Process as claimed in claim 1, wherein the concentration of the gold(III) and platinum(II) compounds is 0.1-0.2 mg/ml.
3. Process as claimed in claims 1-2, wherein the Au(III) compound is
20 HAuCl_4 and the Pt(II) compound is K_2PtCl_4 .
4. Process as claimed in any of claims 1-3, wherein the reducing agent is selected from among sodium borohydride, formaldehyde, formic acid and salts thereof, citric acid and salts thereof, and hydrogen.
5. Process as claimed in claim 4, wherein the reducing agent is sodium
25 borohydride.
6. Process as claimed in any of the preceding claims, wherein the monosaccharide is glucose or fructose.
7. Process as claimed in any of claims 1-6, wherein the disaccharide is

saccharose.

8. Process as claimed in any of the preceding claims, wherein the concentration of monosaccharide or disaccharide is between 0.1 and 30 mg/ml.
- 5 9. Process as claimed in any of the preceding claims, wherein the quantity of aldose with formula (II) added is such that the final concentration is between 0.5 and 2 g/ml.
10. Process as claimed in claim 9, wherein the quantity of aldose with formula (II) added is such that the final concentration is approx. 1 g/ml.
- 10 11. Process as claimed in any of the preceding claims, wherein the aldose with formula (II) is glucose.
12. Process as claimed in any of the preceding claims, wherein a support selected from among activated carbon, titania and alumina is added after reduction of the gold and platinum compounds, and the supported catalyst thus
- 15 obtained is isolated before use.
13. Process as claimed in claim 12, wherein the support is activated carbon having an average particle size of between 5 and 100 micrometres and a specific surface of at least 200 m²/g.
14. Process as claimed in claim 13, wherein the activated carbon has a
- 20 specific surface of 1200 m²/g.
15. Process as claimed in any of claims 12-14, wherein the total gold and platinum content of the catalyst is between 0.1 and 10% of the weight of the support.
16. Process as claimed in claim 15, wherein the total gold and platinum
- 25 content of the catalyst is approximately 1% of the weight of the support.
17. Process as claimed in any of the preceding claims, wherein the weight ratio between metallic gold and platinum is between 5 and 0.2.
18. Process as claimed in claim 17, wherein the weight ratio between

metallic gold and platinum is approx 2.

19. Process as claimed in any of the preceding claims, wherein the metals have an average particle size of between 1 and 20 nanometres.

20. Process as claimed in any of the preceding claims, wherein the partial
5 oxygen pressure is between 0.2 and 10 bars.

21. Bimetallic catalyst based on gold and platinum for oxidation of aldoses to aldonic acids, in particular for oxidation of glucose to gluconic acid, supported on activated carbon, characterised by a total gold and platinum content of between 0.1 and 10% of the weight of the support and a weight
10 ratio between gold and platinum of between 5 and 0.2, the metals having an average particle size of between 1 and 20 nanometres and the activated carbon having an average particle size of between 5 and 100 micrometres and a specific surface of approx. 1200 m²/g.

22. Catalyst as claimed in claim 21, characterised by a total gold and
15 platinum content of approx. 1% of the weight of the support.

23. Catalyst as claimed in claims 21-22, characterised by a weight ratio between gold and platinum of approx 2.

24. Catalyst as claimed in any of claims 21-23, prepared by reducing an aqueous solution of gold (III) and platinum (II) compounds and a
20 monosaccharide with six carbon atoms or a disaccharide formed by two monosaccharide units with six carbon atoms, adding a support constituted by activated carbon to the colloidal solution thus obtained, and isolating the supported catalyst thus obtained by filtration.